1. A motor/generator for a flywheel energy storage system having a housing adapted to be evacuated and maintained at a low pressure atmosphere, a flywheel supported for low-loss rotation in said low pressure atmosphere within said housing on a bearing system, a nonevaporable getter for maintaining said low pressure atmosphere in said housing, and a motor/generator for accelerating and decelerating said flywheel for storing and retrieving energy, said motor/generator comprising:

a rotor that is coupled to and rotates with said flywheel;

a stationary stator that cooperates with said rotor for converting between electrical and mechanical energy in said flywheel system and contains electromagnetic coils;

wherein said stator has a thin barrier coating for minimizing degredation of said low pressure atmosphere by minimizing outgassing from said stator into said housing.

2. A motor/generator for a flywheel energy storage system as described in claim 1 wherein:

said flywheel is constructed principally of steel.

3. A motor/generator for a flywheel energy storage system as described in claim 2 wherein:

said barrier coating is a metal.

4. A motor/generator for a flywheel energy storage system as described in claim 2 wherein:

said electromagnetic coils are substantially enclosed in said barrier coating.

5. A motor/generator for a flywheel energy storage system as described in claim 4 wherein:

said motor/generator stator has a laminated core; and

said barrier coating covers vacuum exposed surfaces of all laminations in said motor/generator core.

6. A motor/generator for a flywheel energy storage system as described in claim 2

wherein:

said motor/generator has a separate motor and a separate generator.

7. A motor/generator for a flywheel energy storage system as described in claim 2 wherein:

said metal barrier coating is constructed of metal foil.

8. A motor/generator for a flywheel energy storage system as described in claim 7 wherein:

said foil is bonded to said stator after manufacture.

9. A motor/generator for a flywheel energy storage system as described in claim 7 wherein:

said foil is bonded to said stator during manufacture by potting said stator with a bonding agent inside said foil.

10. A motor/generator for a flywheel energy storage system as described in claim 2 wherein:

said stator is enclosed in a nonmetallic container that holds a cooling liquid and said nonmetallic container is coated with a barrier coating;

11. A motor/generator for a flywheel energy storage system as described in claim 1 wherein:

said barrier coating is applied by physical vapor deposition.

12. A motor/generator for a flywheel energy storage system as described in claim 10 wherein:

said barrier coating is a metal.

13. A motor/generator for a flywheel energy storage system as described in claim 10

wherein:

said barrier coating is a ceramic.

14. A motor/generator for a flywheel energy storage system as described in claim 1 wherein:

said barrier coating is applied by a process selected from the group consisting of dipping, wiping, spraying and brushing.

15. A motor/generator for a flywheel energy storage system as described in claim 1 wherein:

said barrier coating is in the form of a colloidal suspension of particles prior to application.

16. A motor/generator for a flywheel energy storage system as described in claim 15 wherein:

said particles in said colloidal suspension of particles are carbon particles.

17. A process of applying a barrier coating to reduce outgassing of components of a flywheel system inside a chamber holding said flywheel system, comprising:

assembling components of said flywheel system into said chamber;

evacuating said chamber to a low pressure;

vaporizing a metal inside said chamber to produce a metal vapor; and

allowing said metal vapor to deposit as a barrier coating inside said chamber on said flywheel system components.

18. A process as described in claim 19 wherein:

said barrier coating has a thickness between 1000 Angstroms and 10 mils.